Bancroft Smith, C. (2023). Data culture, the obstacle to SMART customs in the face of disruptive innovations – a Jamaican perspective. *World Customs Journal, 17*(1). https://doi.org/10.55596/001c.73213

ACADEMIC CONTRIBUTIONS

Data Culture, the Obstacle to SMART Customs in the Face of Disruptive Innovations – a Jamaican Perspective

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Keywords: data, e-commerce, innovation, culture

https://doi.org/10.55596/001c.73213

An immature, underdeveloped data culture limits a digitised strategy (which has been seen as the best approach to treat the complexities of e-commerce and 'fast couriers') and stands in the way of the Jamaica Customs Agency (JCA) developing its capacity as a truly SMART (Secure, Measurable, Automated, Risk management based, Technology driven) administration. A commitment to paper-centric processes, disjointed legacy systems, fear and mistrust of technology, a lack of regard for data integrity and an underdeveloped appreciation for the need for advanced technology that facilitates necessary cooperation and collaboration of internal and external data flows are evident oppositions to data proficiency, and a foothold on e-commerce. JCA's information management and border professionals have shed light on the challenges that disruptive innovations in the form of e-commerce and 'fast couriers' present to border management, and expressly identifies big data as a hopeful strategy to overcome current challenges. However, there is an acceptance of the fact that stakeholders need to develop an appreciation for data and its relevance in modern customs operations, as this is the key to a proactive Customs that can conduct intelligent targeting and make decisions based on evidence.

Current trends in cross-border e-commerce and the legal and technological adaptations that have been necessary in Europe, Africa, Middle East and parts of the Caribbean have been cited as models for policy adjustments that the JCA could consider. In addition to its development of local standards for data management and technology that would foster the appetite of internal stakeholders, the JCA also needs to look to national technocrats for policy provisions to facilitate data use and flows among Border Regulatory Agencies (BRAs). The JCA should also appeal to national technocrats to institute policies related to and provide the requisite technological infrastructure to facilitate big data management locally and cross-border.

1. Introduction

Disruptive innovations bear no specific identification and span the gamut of innovations across industries and or technologies that could potentially or are disrupting the status quo or usual way of doing business. In this instance, disruptive innovations refer to cross-border e-commerce and the new model of couriers.

The swift emergence of e-commerce and courier companies (called 'fast couriers' by some Jamaica Customs Agency [JCA] officials) operating in tandem over recent years, and the degree to which the two, combined, have

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significantly impacted clearance operations and border management in Jamaica, highlights a major shift in the global trading community under the influence of digitisation. The redefinition of the global supply chain from business-to-business (B2B) to business-to-person and person-to-person (Whistl, 2021) has demanded a new approach to customs administrations' methods and strategies for efficient border management and customs operations. In the face of an ever-evolving global environment, SMART (Secure, Measurable, Automated, Risk management based, Technology driven) customs administrations (World Trade Organization & World Customs Organization, 2022) have become increasingly more necessary as disruptive innovations in a digitised global space demand a new, smarter, more robust way of business. A digitised global space demands the development of a coherent environment fitted with the requisite technological knowledge, practices and infrastructure where disruptive innovations, facilitated by digitisation, cannot successfully or for any extended period, upend the strategies of customs administrations, to create major vulnerabilities and risks of catastrophic impact to border security and management. The conventional methods (paper processing and physical inspection) in border management are proving inadequate to the extent that the JCA seems to now be struggling, according to border experts and information services professionals, with control and management of the import clearance details of e-commerce. The evidence is, for instance, not being able to capture information of every individual importer and the details of goods being cleared, as many items pass under the assumption of meeting the *de minimis* value and are, therefore, cleared as bulk/consolidated shipments under couriers' details. This is a reality which highlights the need for new local and external policies and regulatory requirements for the management of cross-border flows.

The purpose of this paper is to look at the response of the JCA and other Border Regulatory Agencies (BRAs) to data (as a tool) and technology, and their perception of the degree of relevance of data, the appropriate and adequate use of the Internet of Things (IoT) (as far as it accommodates data use) in customs clearance processes and border management, particularly as it concerns the management of 'fast couriers' and the clearance of e-commerce cargo. E-commerce has been a major disruptor in the trading and clearance environment and 'disruptive innovation requires enabling technology, an innovative business model, and a coherent value network' (Twin, 2022). As such, all things connected to an innovative idea that is causing disruption will also be likely to change. In the trading environment, Customs must respond readily with policy approaches that could form part of the coherent value network that is necessary for effective customs operations, especially in the face of disruptive innovations; and in so doing, change to meet the demands and treat the challenges created by disruptions to still achieve the mandate. In Jamaica, much is wanting in response to the disruption that e-commerce has triggered. Literature looking at customs administrations' response to e-commerce in the European context and in North America demonstrates that

collaboration in cross-border trade policies combined with local data management policies and instruments that guide the implementation and management of data and technology empowers customs administrations to maintain control of security and general border management by stepping up to the digital level of a modern e-commerce environment (WTO and WCO, 2022). A recognition of the power of data and technology to effectively manage, monitor and measure processes positions Customs for improvement in trade facilitation, efficiency in border security, good risk management, process efficiency, customer satisfaction, and overall effective border management, a level of recognition yet to be attained for the Jamaican situation.

Definitions

- Data culture, for the purposes of this paper, is defined as 'the collective behaviours and beliefs of people who value, practice, and encourage the use of data to improve decision-making' (Tableau, n.d.).
- Persons with data culture challenges are customs officials and other BRAs.

2. Context

At the core of the challenges with cross-border e-commerce, for many customs administrations, Jamaica no less, is data culture. This is confirmed by the unavailability of relevant and sufficient technological infrastructure and the absence of policy frameworks that guide the efficient operations of cross-border trade and data flows in the operations of Customs and other BRAs, which share an intrinsic relationship with the absence of common-place acceptance and use of data for decision-making. Trending strategies in data-sharing platforms, technological policies and cross-border collaborative efforts in the European, American and Asian contexts highlight that there are administrations that have managed to successfully adjust and tackle the complexities of disruptions to regain control of border management, even in relation to the fast-evolving phenomenon, e-commerce. As stated by the WTO and WCO (2022, p. 3):

> Customs authorities have embraced advanced analytical technologies. Around half use some combination of big data, data analytics, artificial intelligence and machine learning. Those who do not currently use them have plans to do so in the future. Many customs authorities see clear benefits from advanced technologies, particularly, regarding risk management and profiling, fraud detection and ensuring greater compliance.

The successes that these administrations boast seem to have been facilitated by the common-place acceptance and use of advanced technological tools and strategies, and the common understanding that big data management, using

automated instruments such as blockchain and distributed ledger technology, must now form part of modern cross-border trade. This common-place understanding has enabled quick responses to instituting solutions to cross-border trade in this new dispensation, much of which has included new and innovative cross-border cooperation and data-sharing throughout the supply chain by using big data instruments.

The Chief Information Officer's (CIO) take on data culture in the JCA resonates the gap in JCA and the need for development:

> We are developing. Immature, but the culture is shifting. Because areas like Risk Management, Post Clearance Audit and Planning and Research have been engaging big data for decision making...but not so much on the operations side. (A Williams, personal communication, 11 October 2022)

Quality data is essential for operational efficiency and effectiveness. However, the quality of data is negatively impacted by an immature data culture on the frontline. Of note – customs best practices, policy design and considerations were instituted in a context where the global supply chain was mostly defined by B2B transactions and person-to-person transactions were conventionally limited to specific types of shipments. Additionally, customer representation to Customs was being facilitated by trained, licensed and otherwise regulated customs brokers. Examination reports existed only as attachments to clearance documents of shipments to which they related. Even with the existence of a digital 'breach system' and audit data pages such as those contained in the Revenue Administration Information System (RAIS), there was no system to collate patterns of discrepancies or any other indicator that could inform risk management decisions, as these systems existed in silos. Otherwise, information was stored in physical file format, disjointed and disaggregated, and the extent of its organisation was limited to the date of processing or release, or similar criteria. The approach to cargo examination was to 'dismantle the haystack' to the degree of personal satisfaction of the examining officer in an effort to find the target two per cent of non-compliance (a legacy which still holds true today). As expressed by the CIO, this underdeveloped data culture has meant throwing more [human] resources into detection and prevention of fraud, which, when realities like e-commerce are considered, is a major operational limitation with major implications for national security.

The United Nations Conference on Trade and Development's (UNCTAD) Automated System for Customs Data (ASYCUDA) was the initiation into a SMART administration for the JCA. Introduced to Jamaica in 2014, an otherwise effective system that had served other administrations well, ASYCUDA has been limited in its potential and capacity by a challenging data culture that ignores the necessity of quality inputs and fails to embrace

and explore all the available features of a system built to enable post audits and risk analysis, as opined by information management professionals in the Information Services Division of the JCA.

Even with ASYCUDA, there are limitations in respect of features being accessed and used to enhance decision-making and to optimise trade facilitation and risk management in the clearance of conventional cargo. Add the complexity of e-commerce and 'fast couriers' and the challenges become glaring. As it concerns regular processing of cargo, the CIO states:

> Data allows you to see patterns and detect realities. Otherwise [we are] very reactive. There is a direct implication on risk management; and not just risk management but also the decisions from leadership in operations... But due to our lack of an appreciation for data relevance, we find instances where data presented is not adequate or is captured out of context... (A Williams, personal communication, 11 October 2022)

JCA is yet to maximise the benefits of ASYCUDA, due in part to an immature data and technological culture. Barbados, for example, was able to attain 24-hour clearance on 60 per cent of import payments in 2020 since implementing ASYCUDA (UNCTAD, 2020). Even with more advanced investment in technology and digitisation in the form of the Jamaica Single Window for Trade (JSWIFT), for instance, Jamaica is yet to attain 24-hour clearance (total exit, where cargo is completely out of the customs area) but is aiming to achieve this goal in 2023. Contributing factors at the national level include challenges in the recognition of the need for a coherent value network within which an automated data processing system like ASYCUDA needs to function for full efficiency. Disaggregation in the strategic goals of government agencies responsible for border management also speaks to the lack of vision and understanding of the need for coherency and cohesiveness in border efforts. This challenges the process and degree of cooperation and coordination, even more so for data collaboration. Also, the JCA's lack of recognition of the need for responsible data interaction and management affects quality data sets and output for decision-making, measurement, analysis and improvement. For example, some evident pitfalls that have affected the efficiency of the system have included but are not limited to, officers omitting to use 'fraud codes' embedded in the system to assist risk management and post audit processes, and to measure compliance. There is also the persistent challenge with quality data inputted in the Inspection Act, a feature of the ASYCUDA system tailored to capture data regarding non-compliances using predetermined codes, necessary for strategic decisions or targeting. However, ASYCUDA has improved trade facilitation by removing a completely manual paper process and enabling traders and freight forwarders to submit the Single Administrative Document (SAD) remotely. Data consciousness at the organisational level, however, has been lacking and the JCA is yet to capitalise on the benefits of automated data to detect fraud and other forms of non-

compliance. This acts to the benefit of importers who are aware of the administration's limitations, and may manipulate the system's constraints to their benefit. As stated by the CIO, 'often, submissions are made with incorrect data to meet submission deadline, and information is later changed' (A Williams, personal communication, 11 October 2022).

Optimal capacity for trade facilitation through automated processes is limited by the lack of availability of a desirable standard in the digital infrastructure, which automated, multi-user systems like ASYCUDA need for consistent service and operation. Requisite attention is not given to the standard of digital networks provided, particularly for government agencies. This includes a lack of appreciation of the need for proper bandwidth and network infrastructure that enables consistent functionality, large load capacity, speedy processing and distribution of data, and general good quality automated services. The direct result of this is frequent down-times of a system like ASYCUDA, which not only creates gaps in the end-to-end processing, but is also forcing Customs to resort to efforts such as manual processing as part of its business continuity plan.

The low appetite for data use and relevance is very apparent in the JCA's slow response to the disruption caused by e-commerce and 'fast couriers.' E-commerce has emerged and evolved rapidly over the past few years. The JCA, like many other customs administrations, was caught off-guard by this new form of person-to-person and business-to-person supply chain model. According to a border protection expert with many years of experience in the JCA:

> It's hard to regulate a fast-growing industry like fast couriers. Unlike [conventional] freight forwarders who are regulated, we have no control over [fast couriers] who are interacting with us on behalf of customers...the vulnerabilities are major! (T Foote, personal communication, 12 October 2022)

Connectivity and open markets via the internet mean that even dangerous goods and goods originating from high-risk locations and suppliers are now accessible. Customs has since had to adjust from processing business mail and the occasional person-to-person package through conventional, well-established couriers such as DHL, FedEx and MailPac, to struggling against upstarts that aim to take advantage of the swelling clearance and delivery market. The challenge to treat glaring new risks presented by unregulated 'couriers' numbering well over 50 in the air cargo operations of Kingston alone is just one part of the problem. To create their own coherent value network in cross-border trade through e-commerce, couriers in Jamaica have set up large warehouses in other countries (primarily the United States, from where much of e-commerce to Jamaica is shipped). This creates a sort of 'phantomisation' of trade and the trader, eluding targeting strategies and rendering strategies such

as 'random selection' (a type of selection process used to choose goods and passengers for inspection, at random) to be very ineffective. According to the JCA's border protection expert:

> From the border perspective there are a lot of levels of risk when dealing with fast couriers. Processing time [for import] is very speedy, and we are unable to do intelligent targeting before-hand because breakdown manifest is not available before wheels down. Also, couriers act on behalf of importers, so Customs does not have information on [potential] persons of interest because goods are under courier names. For export: the relationship between client and freight forwarder is so close that it is the freight forwarder's name on exports, hiding the true exporter, and this is used as a strategy to circumvent targeting. (T Foote, personal communication, 12 October 2022)

Strategies that had been formulated and refined in targeting cross-border trade in the conventional B2B supply chain have been found to be woefully inadequate or not even applicable to modern cross-border flows like e-commerce. E-commerce cargo loads are large, voluminous pallets with several individual small packages and parcels, which prove difficult to search and to determine selection criteria for. For instance, as highlighted by border protection experts, lottery scamming has been cited as one threat that could be easily facilitated by the illusive nature of e-commerce and 'fast couriers,' as lottery scamming paraphernalia are sent as documents, and in the current practice of inspection, documents are not scanned, leaving a freeway for the movement of these illicit items.

Facilitating end-to-end data flow could be a powerful response to the challenges, a solution for modern targeting and a means to gain control over illusive practices in e-commerce. Depending on digital transmission of data from the point of warehousing through to the point of off-loading, the use of modern scanning equipment and data-sharing platforms could be the solution to treating revenue leakage due to vague descriptions, inconsistences in declaration of values, concealment and other fraud tactics. But, to accomplish this the JCA needs to mobilise its stakeholders to be more sensitive to data. According to one of JCA's border protection experts, T Foote, the culture shift may require standardisation of data use and end-to-end flows so that reliable data that is not skewed to stakeholders' interests can be available. E-commerce, in collaboration with 'fast couriers,' involves the heavy use of data and IoT to make the business model successful. As such automated and data driven tools must be Customs' response to vulnerabilities that have roots in digitisation, for both internal cooperation and external flows.

The illusive and overwhelming effects that disruptive innovations like e-commerce have had on customs operations and border management prove that Jamaica Customs, unlike some other administrations in Europe, the Americas and Asia, has not come to the full recognition that solutions are available,

other than the conventional methods of customs management, particularly for cross-border trade. Physical inspections, information chasing, and eyeballing as many parts of the clearance process as possible to identify non-compliance no longer bears much relevance. However, an immature data culture that results in stakeholders submitting arbitrary data and manipulating data submissions to suit their interests; where customs officials are themselves inconsistent and untimely with data submissions and have no data appreciation; where technology is not used accordingly or given due regard (for example, tablets issued to facilitate faster processing) is an obstacle to the vision of big data in a SMART JCA.

3. Policy recommendations

3.1. Data policy

A data policy for the JCA is a great starting point. This could include strategies similar to those used by technology companies that host frequent information huddles as a means of keeping employees up-to-date with current technological trends and applicability. Jamaica Customs has been making strides to develop and embrace a data culture, digitisation and playing its part in the data ecosystem (TradeBeat, 2022). To advance this cause, the JCA could consider instituting a data policy that includes an annual or biannual information seminar on trending data and technological strategies being used or implemented by customs administrations worldwide. This could include information on how these same trends can be applied in the JCA for increased efficiency, which would keep employees actively engaged with data use and management as a necessary part of their day-to-day functions and a normal way of business for the JCA. This data policy should also include data- and technology related performance indicators.

The JCA is on the verge of implementing the national *Data Protection Act (2020)*, which speaks to guidelines on storing, retrieval and dissemination of stakeholders' data. But without its own data policy that brings a wholistic awareness of data use and management, the JCA will still be a long way from functioning as a SMART customs administration. According to OSTHUS (n.d.):

> a data policy contains a set of rules, principles, and guidelines that provide a framework for different areas of data management throughout the enterprise, including but not limited to data governance, data quality, and data architecture.

As such, the approach would not be limited, but would raise awareness in customs officials of the relevance of data in border management and the necessity of developing a healthy data culture in a highly digitised trading context. With such a policy, the JCA would be hard-pressed to conform to its own requirements and make data interface and management a part of its key focus, especially under the watchful surveillance of External Quality Management Auditors. Auditors would be monitoring to ensure JCA's

compliance with its own policies created to comply with the ISO 9001:2015 Quality Management Framework, a certified standard to which the JCA is aspiring.

An organisational data policy would position the JCA to align itself with the WCO's Trade Facilitation Agreement (TFA), and to participate in a growing community of customs administrations that are embracing the reality of big data in customs operations. The TFA, pushing for SMART customs, encourages paperless processes, cross-border collaboration and border control through information sharing. Distributed ledger technology (DLT) and blockchain seem to be the trending strategies being used to manage cross-border flows and stakeholder cooperation. Considering the challenges present in the JCA, it stands to benefit immensely from instituting these technological solutions that promise more reliable and available data. An organisational data policy would help to determine a version of the requisite architecture instrument that would work best for the JCA.

Jamaica could pattern the approach of the European Parliament's Policy Department in investigating adaptations necessary to adjust to cross-border e-commerce. Admitting that the European Union's response has not been as coherent as that of the US and looking at legal and technological adaptations necessary to tackle the challenges of e-commerce has positioned the European Union to construct the collaborative and technological solutions that are best suited to the region (Burri, 2017).

The institution of blockchain and DLT in the JCA could help customs officials to understand and embrace data interface and technology as a common way of doing business. The system would be the only way that cargo (or at least e-commerce) processing is managed with an end-to-end data flow that enhances risk management strategies and fully automates clearance operations, eliminating the need to break down large shipments looking for signs of non-conformance. Of course, this would require legal research and strategies for cross-border cooperation to see how it could best work for the JCA.

Benefits such as immutability of data, as seen in customs administrations such as Argentina and Uruguay, that have moved beyond proof-of-concept with blockchain (WTO and WCO, 2022) would add great value to the JCA's efforts to achieve process efficiency and a more mature data culture. In the United Arab Emirates, an e-commerce blockchain based platform is used to facilitate and track e-commerce within the network of customs administrations (WTO and WCO, 2022). This approach could be instrumental in removing the elusive character of trade and traders who are now experienced with e-commerce in Jamaica. Also, blockchain technology would raise the appetite for data relevance and data quality as the system demands quality data from participating stakeholders. Not only does it require quality data input that will, as a result, give quality output, but traders will not be able to manipulate the system to their benefit as blockchain presents hopes of immutability. The

architecture of blockchain and DLT not only give the hope of automatic cross-border collaboration in e-commerce, but also greater cooperation and compliance in the local trading space.

Concerns regarding blockchain in Jamaica would be the same concerns cited in other customs administrations that have either fully rolled out this system, or are still in their proof-of-concept stage (WTO and WCO, 2022). To begin with, the JCA may face challenges in instituting blockchain technology in the region, with the level of knowledge and the skillsets available, as it remains mostly just a concept for much of the Caribbean. The lack of standardised datasets may challenge the smooth roll-out of blockchain for the JCA, as data relevance has never been a great focus in its culture. However, due to its strict data character, stakeholders would, no doubt, be encouraged to develop capacity and increase efficiency. Existing legacy systems, lack of trust in data-sharing and the absence of government strategy would also be on the list of concerns for the JCA. However, the acknowledgment of these challenges and subsequent guidance from policy instruments such as a data policy and a national technology policy should, together, form a resolution for these challenges.

Jamaica could look also at other jurisdictions that are coordinating cross-border flows through paperless processing. Considering these are Jamaica's two most prominent e-commerce source markets, Jamaica could look at the China-America cross-border cooperation in digital trade initiatives and regulatory changes to facilitate transition to digitised processes. North Africa and the Middle East, South and Central America and Caribbean territories such as Ecuador, Costa Rica, Chile and Colombia could offer perspective in how digital systems could be architectured for Jamaica.

3.2. National technology policy

Considering the national challenges, the JCA would benefit greatly from the development and institution of a policy that addresses data and technology from a national perspective. Private corporate entities have embarked on data analytics and information sharing, on a small scale. But a governmental strategy, which seeks to unify the mission and strategies of agencies participating in border management is a space where the culture of big data and data collaboration is becoming increasingly necessary. With unified purpose, the need for greater cooperation would become more evident among BRAs. Embracing technology and data-sharing would certainly be less challenging, as it would become a requirement or necessity in the function of BRAs.

As the foundational concept, a national strategy is also needed for the quality of technological infrastructure that is offered by suppliers in the market. JCA could benefit from a national strategy and procurement policy that mandates service providers to offer technological services or products that are at world standard. Otherwise, the government should improve its capacity to provide its own technological infrastructure. Frequent down-times rob time and financial resources and contribute to stakeholders' mistrust and apprehension in embracing technology used by government, therefore limiting

their willingness to learn and embrace new technological thrusts and fuelling their aversion to data use and technology. Consequently, a national agenda that treats this challenge can only be of benefit.

To bolster this effort, more research should be undertaken into how a national policy to facilitate data use and cross-border data flows can be developed. European territories have developed such policies geared at facilitating cross-border commerce and data flows. The same could be investigated and tailored to suit the Jamaican context.

3.3. Inclusivity

A data policy for the JCA would be highly inclusive, as all stakeholders across the board would need to be involved in developing a positive data culture for its efficacy. Information sessions should take the format of training and sensitisation, so that even stakeholders who are less aware or are technologically challenged will be sufficiently exposed and given the opportunity to develop their knowledge and expertise in data handling. Culture shift spans the whole range of an organisation, and so, even external stakeholders will form a part of the process, as they stand to benefit from speedier processing and a less manual interface, which saves time and money.

The institution and mastery of the requirements of a local data policy will give Customs the confidence to consider not just public-private data cooperation locally, but also cross-border data flow and collaboration, which is critical for greater efficiency in border control in this era. It has been said that fragmented border management is a '"Westphalian" artifact' (Bersin, n.d., para. 19). Cooperation and collaboration are necessary for modern border management. According to Burri (2017, p. 8):

> In the context of trade and trade policies, the growing importance of data for the digital economy has one crucial implication: Data *must* flow across borders. Many of the economic innovations based on digital technologies do rely on global data flows. Things like the app economy, the outsourcing of many services, the provision of digital products and streaming services, many cloud computing applications or the Internet of Things, would not function under restrictions on the cross-border flow of data. This critical interdependence puts trade policy under pressure and demands clear-cut solutions.

A data policy is critical to the JCA's ability to pivot and re-establish controls in the local execution of customs procedures and to improve the efficiency of cross-border collaboration in a technological climate. At the national level, no one gets left out, and so, formulating a national data policy is to everyone's benefit.

3.4. Cost

Developing a data policy is cost-effective, as officials with the requisite knowledge within the customs agency can be used or trained to develop such a policy at an affordable cost for consultation. Additional costs would include incidentals and minor spend, depending on the format the JCA may choose to adopt. Acquiring and implementing a data-sharing platform is, however, not as simple. The JCA would need to execute the necessary analyses and secure finances to fund such a major project. Proper justification would need to be submitted to government and a process for approval executed.

4. Conclusion

Flynn (2000, p. 57) writes:

> The global economy's move toward more open societies and liberalized economies does not just facilitate the movement for products and workers – it also expedites passages for terrorists, small arms, drugs, illegal immigrants and diseases. The obvious solution to the challenge of filtering the bad from the good might seem to be increased funding for border controls...

With funding, customs administrations may be able to source the physical resources deemed necessary. Without the national and organisational strategies and policies to influence the data culture of customs administrations, however, old ways of doing things, legacy systems and data aversion will still present massive obstacles and vulnerabilities to efforts to function as SMART Customs in a virtually borderless global space.

Submitted: February 01, 2023 AEDT, Accepted: March 10, 2023 AEDT

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